(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 13 January 2005 (13.01.2005)

PCT

(10) International Publication Number WO 2005/004215 $\,$ A $\,$

(51) International Patent Classification?: H01L 21/205, 21/31

(21) International Application Number:

PCT/JP2004/009577

(22) International Filing Date: 30 June 2004 (30.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 2003-191756

4 July 2003 (04.07.2003) JP

(71) Applicant (for all designated States except US): EBARA CORPORATION [JP/JP]; 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 1448510 (JP).

(72) Inventors; and

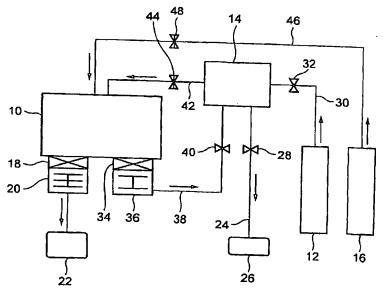
(75) Inventors/Applicants (for US only): HORIUCHI, Takao [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 1448510 (JP). OGAMINO, Hiroaki [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 1448510 (JP). NIIMURA, Yasuhiro [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho,

Ohta-ku, Tokyo 1448510 (JP). **HATTORI, Hiroshi** [JP/JP]; c/o Ebara Corporation, 11-1, Haneda Asahi-cho, Ohta-ku, Tokyo 1448510 (JP).

- (74) Agents: MIYAGAWA, Teiji et al.; 6th Floor, Fuji Bldg., 19, Aizumi-cho, Shinjuku-ku, Tokyo 1600005 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: SUBSTRATE PROCESSING SYSTEM



(57) Abstract: A substrate processing system is provided, which efficiently utilizes reactive substances or carrier gases necessary for the surface processing of a substrate, simplifies equipment for the gas transfer and effects energy saving. This system comprises a gas supply source 12 for supplying a process gas containing a reactive substance, a reservoir tank 14 connected to the gas supply source 12 for reserving the process gas, a reactor 10 for exposing a substrate placed therein to the process gas, a first circulation pipe 38 for introducing the process gas inside the reactor 10 into the reservoir tank 14, a second circulation pipe 42 for introducing at least pipe 42 for regulating the amount of process gas to be introduced into the reactor 10.

WO 2005/004215 A1



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.